

ABSTRACT

ENERGY GRADIENT ION BEAM DEPOSITION OF CARBON OVERCOATS ON RIGID DISK MEDIA FOR MAGNETIC RECORDINGS

5 In the energy gradient ion beam deposition technique of the present invention, the
fabrication of the overcoat layer starts with a low energy ion beam to avoid magnetic layer
implantation problems, followed by higher deposition energies where the higher energy atoms
are implanted into the previously formed lower energy overcoat layer, rather than the magnetic
layer. The energy gradient ion beam deposition process therefore results in a thin overcoat layer
that is denser than a comparable layer formed by low energy magnetron sputtering, and which
overcoat layer provides good mechanical and corrosion protection to the magnetic layer, without
degrading the magnetic properties of the magnetic layer. Where a magnetic media hard disk of
the present invention is utilized within a hard disk drive, the thinner overcoat layer allows the
magnetic head of the disk drive to fly closer to the magnetic media layer, thereby facilitating an
increase in the areal data storage density of the hard disk drive.